

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 February 2006 (09.02.2006)

PCT

(10) International Publication Number
WO 2006/014190 A1

(51) International Patent Classification⁷: **H01M 8/10**,
2/00, 2/02, 2/14, C25B 1/00

(21) International Application Number:
PCT/US2005/009308

(22) International Filing Date: 16 March 2005 (16.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/553,390 16 March 2004 (16.03.2004) US

(71) Applicant (for all designated States except US): **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 12th Floor, 1111 Franklin Street, Oakland, CA 94607-5200 (US).

(71) Applicants and

(72) Inventors: **JACOBSON, Craig, P.** [US/US]; 120 Ascot Court #A, Moraga, CA 94556 (US). **DE JONGHE, Lutgard, C.** [US/US]; 910 Acalanes Road, Lafayette, CA 94549 (US). **LU, Chun** [CN/US]; 1110 Jackson Street, Apartment 916, Albany, CA 94706 (US).

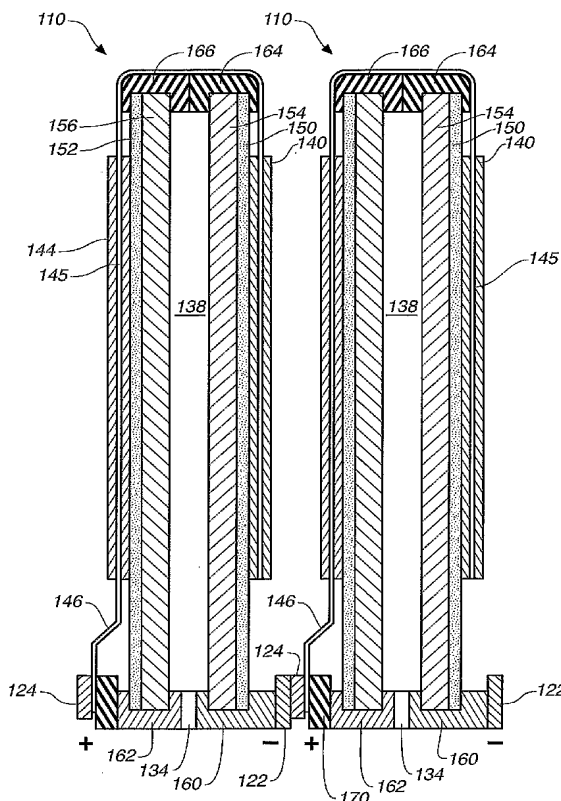
(74) Agent: **NOLD, Charles, R.**; Lawrence Berkeley National Laboratory, One Cyclotron Road, Berkeley, CA 94720 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(81) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

[Continued on next page]

(54) Title: COMPACT FUEL CELL



(57) Abstract: A novel electrochemical cell which may be a solid oxide fuel cell (SOFC) is disclosed where the cathodes (144, 140) may be exposed to the air and open to the ambient atmosphere without further housing. Current collector (145) extends through a first cathode on one side of a unit and over the unit through the cathode on the other side of the unit and is in electrical contact via lead (146) with housing unit (122 and 124). Electrical insulator (170) prevents electrical contact between two units. Fuel inlet manifold (134) allows fuel to communicate with internal space (138) between the anodes (154 and 156). Electrically insulating members (164 and 166) prevent the current collector from being in electrical contact with the anode.



SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*